NASA Goddard Space Flight Center

ISO 9001 Registration

Project Plan

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The ISO 9001 Registration Project Plan reflects GSFC's commitment to ISO 9001 Registration and addresses the responsibilities and resources necessary for successfully accomplishment of the task.

_____ _____
Joe Rothenberg Date
Center Director

_____ _____
Arthur Fuchs Date
Management Representative for Quality

_____ _____
David Cleveland Date
Project Manager

_____ _____
Charles Tulip Date
Chief Financial Officer

ACRONYMS

ANSI – American National Standards Institute
ASQC – American Society for Quality Control
HEDS – Human Exploration and Development of Space
ISO – International Standards Organization
MRQ – Management Representative for Quality
PM – Project Manager
QMS – Quality Management System
SLP – System Level Procedure

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Attachments

1. Overview

The ISO 9001 Registration Project Plan defines the steps by which GSFC will attain ISO 9001 registration as part of the NASA initiative for all non-HEDS centers to become registered by September 1999. It provides guidance for the Center's work toward this objective and establishes a framework in which GSFC and its mission support contractors, including on-site and near-site, will implement continuous quality improvement in its core business areas.

The Project is under the leadership of a Project Manager (PM), appointed by the Center Director and responsible for its successful completion. For this project, the PM will report to the Management Representative for Quality (MRQ), also designated by the Center Director. The Project Manager will be supported by a Quality Management System (QMS) Council composed of representatives nominated by the directorates. In addition, a Documentation Manager will be appointed for the duration of the Project for QMS document and change control. These individuals are identified in Attachment 1.

The Project is planned for 24 months, concluding with the award of registration, as planned for April 1999, but no later than September 1999.

This Project is organized into 5 phases that define and structure the work required for the Project: preparation; documentation; implementation; external assessment; and periodic assessment and improvement .

The Project will require scheduled QMS Council meetings and written reports aimed at assessing progress and documenting issues. The reports will include a biweekly update from each Council member to the Project Manager, and a monthly report from the Project Manager to the MRQ. The reports will reflect progress against objectives for the specified period, list objectives for the next period, and enumerate issues.

In order to maintain ISO 9001 registration, one of the outcomes will be to establish and maintain a document control and change process. A second outcome is a systematic approach to continuous improvement. Elements and organizations that require improvement will be identified and corrected through actions resulting from the internal audit system. Internal auditing will also be conducted in support of ongoing Registrar surveillance audits after registration is received.

Project deliverables will include: quality policy; quality manual; documentation of all procedures within the quality system; work instructions as required; and quality records.

2. Project Scope

The scope of this Project is to: define the Center's scope of certification and quality policy in concert with Executive Management; to develop and implement a Center-wide Quality Management System that is consistent with the scope and policy and compliant with the requirements of ISO 9001; and to obtain third party certification to ISO 9001 no later than September 1999. Although the agency has not dictated a scope of certification for the Centers, the expectation is that the GSFC will seek registration for its core business areas, including various types of hardware, software, documentation and services.

3. Roles and Responsibilities

The Project relies on the successful execution of roles and responsibilities as described below. The personnel assigned these roles and responsibilities are identified in Attachment 1. In addition to the relationship of these roles to this Project, it should be understood that registration is subject to continual review. Once ISO 9001 registration is received, a monitoring process conducted by the Registrar requires the continuation of a number of ISO 9001 related activities that will be developed as part of this Project, including:

- Management Review
- Continuous Internal Auditing
- Documentation Control
- Personnel Training
- Corrective and Preventive Actions

To support these post-Registration activities after the end of the Project, the roles of the Management Representative for Quality (MRQ), the QMS Quality Council and the internal audit system will remain active.

3.1. Executive Management

Executive Management participation is a requirement of the ISO 9000 series of standards (see section 4.1 of the ANSI/ASQC 9001-1994 standard). For the GSFC, the Center Director is executive management and is responsible for four components of the Project: (1) implementing the quality policy, (2) making resources available as the Project needs them, (3) appointing the MRQ, and (4) conducting periodic management reviews of the quality system (see section 4.1.3 of the ANSI/ASQC 9001-1994 standard).

The Center Director will chair bimonthly executive management review meetings to review the status of the ISO 9001 Registration Project.

3.2. Management Representative for Quality

The Management Representative for Quality (MRQ) role is a requirement of the ISO 9000 series of standards (see ISO 9000, section 4.1.2.3) and is appointed by the Center Director. The MRQ is responsible for:

- Creating, implementing, and maintaining the Quality Management System (QMS) for the Center
- Working with the Project Manager, assisting him as necessary to obtain resources
- Monitoring the registration effort through receipt of registration
- Managing the internal auditing process, including the corrective action process
- Participating in quarterly management review meetings

- Maintaining archives of the quarterly management review meetings (meeting records will remain on file for three years)

3.3. Project Manager

The Project Manager is responsible for successful completion of the project. He is responsible for completing this Project Plan and obtaining written approval to proceed. The Project Manager will be selected by the Center Director and report to the MRQ for the duration of this Project.

He is responsible for conducting all meetings, recruiting and assigning staff (with the support of the MRQ), monitoring progress, and defining and allocating resources (people, money, services) as required to complete the registration process according to this plan.

3.4. QMS Council

The QMS Council, working with the Project Manager, is responsible for all tasks required to meet the ISO 9001 standard. The team is appointed by the MRQ and is composed of the individuals in Attachment 1. Each member will identify an alternate member. The QMS Council is responsible for:

- Identifying the processes that are part of the quality system.
- Developing the format and style for procedures
- Identifying the QMS Council members who will lead the tasks to prepare the various procedures
- Verifying that the documentation is accurate
- Developing the Quality Manual and other documents necessary to meet the requirements of the ISO 9001 standard
- Participating in the third party audit

Upon award of registration, the QMS Quality Council will remain active as the GSFC Corrective Action Board, to review and approve system level corrective actions, including the authorization of changes to the Quality Management System.

3.5. Documentation Administrator

A QMS Documentation Administrator will be appointed to control all QMS documentation upon receipt of final drafts from the QMS Council members. The Documentation Administrator will maintain master copies of the following documents:

- Quality Policy
- Quality Manual
- System Level Procedures

QMS document control will be in accordance with the approved version of the System Level Procedure on Document and Data Control. The Documentation Administrator will be the Project's liaison with the Center's Forms, Records and Directives Office, Code 231, which is responsible for directives clearance and with the GSFC Homepage Curator, who is responsible for posting approved documents on the Center's WWW homepage.

3.6. Directorates

The Directorates, including the Office of Human Resources, will nominate QMS Council members to the Center Director to represent their interests in the development of the QMS. Members will participate on behalf of their Directorate in the deliberations and decisions of the Council and will be chartered to obtain from their Directorates such support as necessary in the development of QMS procedures and documentation. As requested by the PM, the Directorates will also name alternate members for the QMS Council and other personnel to be trained as and to serve as internal auditors.

The Directorates are individually responsible for developing and implementing directorate level and subordinate procedures, processes, and work instructions for their organizations in support of the Center's registration effort. They will be supported in this effort by the MRQ, PM, and QMS Council.

3.7. Internal Auditors

The GSFC will require a pool of internal auditors, comprised of trained personnel from across the Center. With recommendations from the QMS Quality Council, the MRQ will make the selection of civil service personnel to be trained as auditors and to become part of the pool of internal auditors. During the conduct of internal audits, auditors will report to the MRQ. Their positions as auditors will not conflict in any way with their other day-to-day responsibilities. An internal auditor may not audit any part of the quality management system for which they are responsible. As the Project moves into the implementation phase, internal auditors will:

- Interview people performing the tasks covered in each written procedure to ensure that what is written matches the tasks performed
- Note discrepancies for inclusion in the audit reports by the Audit team Leader

3.8. External Consultants

External consultants may be retained to clarify the ISO 9001 standard's terminology, describe viable implementation approaches and provide employee training. The Project Manager will be responsible for directing such activities.

4. Project Phases

The Project is comprised of 5 phases during which some overlap will occur. The following outlines the process that GSFC will use to attain registration.

4.1. Preparation

Given that resources (people, time, dollars) are required to complete the registration effort, preparation is essential to the Project's success.

ISO 9000 Orientation -- The Center Director selects the Management Representative for Quality and the Project Manager. The MRQ selects directorate representatives to serve as the QMS Council. These will be key individuals who will represent their directorates in matters relating to the QMS and who can effect changes that may be required in the organization. All team members will be expected to attend formal training courses to become familiar with the requirements of ISO 9001.

Quality System Assessment -- The ISO 9000 quality system includes all business processes that contribute to the quality of GSFC's products. The QMS Council will identify all ISO 9001-related business processes. Those procedures which are already documented will be collected and reviewed by the QMS Council, comparing them to the corresponding ISO 9001 elements. The outcome of this step will be a list of procedures to be documented.

Project Plan -- This plan, written by The Project Manager with information supplied by the QMS Quality Council, is the blueprint to be used for this effort. It is understood that over the life of the Project some modifications may occur due to changes not foreseen as of this writing. If changes are necessary, the appropriate level(s) of management will be involved. Decisions will be made in a timely manner and documented.

Registrar -- As part of an agency-wide effort, the LeRC is procuring registration services through a single procurement. This is expected to result in selection of a GSFC Registrar no later than September 1, 1997, from whom the Center can purchase various services through fixed price delivery orders. Upon selection of a Registrar, the Project Manager will review the company's expertise, experience with registering other businesses, country affiliations, availability, and cost and communicate this to the QMS Council.

4.2. Documentation

Documentation of procedures is central to obtaining ISO 9001 registration. Once procedures are identified, analyzed, and optimized, each one must be consistently documented and implemented. Implementation will be verified by conducting internal audits and ensuring that required corrective and preventive actions occur.

Employees must understand that ISO 9001 requires the documentation of all procedures and necessary work instructions related to the scope of certification. During this process some employees will be interviewed and asked to contribute. Employee awareness training at this point will focus on the roles they might be asked to play in the preparation of the documentation.

The QMS Quality Council will define the documentation schema and formats to be used to document the Quality Management System.

The family of system level procedures will be the core of the Center's registration effort. It contains the procedures that define the key center processes affecting quality and conformance to requirements. These are controlled documents and will be authorized by the Center Director. Project and organizational-specific procedures must be authored and approved by the project or organization affected in accordance with the documentation scheme developed by the QMS Quality Council.

ISO 9001 requires work instructions only if the absence of that information would adversely affect the quality of the product or service. Their documentation and approval is the responsibility of the affected organization.

The Management Representative for Quality is responsible for ensuring that the Center conforms to requirements of ISO 9001 paragraph 4.1.1 regarding quality policy objectives, commitment, and relevancy. The statements will convey the Center's policy for quality to its employees and clients. It will be signed by the Center Director and placed in prominent locations throughout the organization.

The Quality Manual will be developed in final form after the procedures are written and organized and after the quality policy is completed. The Quality Manual will describe how the standard's requirements are satisfied and provide a cross-reference of procedures and requirements.

The QMS Council, with guidance and assistance from the MRQ, will review each procedure for adherence to the standard. In cases where the requirements are not met, the procedures will be rewritten and resubmitted. The Project Manager is responsible for editorial consistency.

When documents meet the requirements of ISO 9001 and are in final draft form, they will be placed under document control by the Documentation Administrator. All documents from this point forward will be issued under an approved and compliant control procedure.

4.3. Implementation

This phase focuses on planning for the audits, educating the employees about the new or modified procedures, and performing all procedures according to the documentation.

ISO 9001 is a way of doing business within this organization. For this effort to be successful, all employees in the organization must understand what ISO 9001 is, how it impacts everyday business, and how each person can contribute to improving the quality system. Communicating with and training of all affected employees will take place over the life of the Project. All affected employees will receive approximately four hours of ISO 9001 training during this Project. As the Project moves through the different phases, training will occur at the appropriate times at the department level.

Organizational sections of ISO 9001--Management Review (4.1.3), Corrective and Preventive Actions (4.14), Internal Quality Audits (4.17), and Control of Quality Records (4.16)-- will be implemented during this phase.

Prepare for the Internal Audit -- The initial audit plan is developed by the QMS Council and approved by the MRQ. It will include the criteria used to select internal auditors, the list of auditors, and a description of how the auditors will be trained. The plan will also specify which procedure(s) each auditor will be responsible for, and the schedule for conducting the audits prior to registration.

As a minimum, the internal auditors will have completed an internal auditing course offered through the Employee and Organizational Development Office, Code 114.

Quality System Implementation -- The procedure owners will educate and possibly retrain their employees to perform their work according to the written procedures. Implementation and testing at the hands of employees indicate if the procedures reflect the most efficient methods of accomplishing of work. Note that employees should begin using procedures as soon as they are completed.

Once the employees are trained on the procedures per the written documentation, they must follow these procedures in their actions. Changes in the documentation (procedures, work instructions, and records) will probably occur based on the practical implementation of the documentation.

Once employees are performing their work according to the written procedures, they must be prepared for internal audits. It must be explained that the purpose of internal audits is to make sure that what is being done is actually described in the documentation.

Internal Auditing Implementation -- Internal audits will be conducted to verify that the documentation reflects the work being performed. It is expected that areas where the system is not yet working will be identified during the first round of internal audits. Deviations will be noted by the auditors and dealt with by using the internal audit corrective and preventive action process.

Noncompliances found during the audit process will be documented on audit report forms. The internal auditors will discuss the noncompliances with the process owners. The process owners are responsible for making corrective and preventive actions. In the event a process owner and auditor do not agree on

either an audit report or a corrective/preventive action, the auditor will meet with the MRQ. The MRQ will then have final responsibility for resolving the disagreement.

A Corrective Action Plan may be necessary, depending on the number of corrective and preventive actions required. A Corrective Action Plan specifies the actions that must be taken and the process by which they will occur. It also identifies those responsible for the actions and defines how the documentation will be updated and re-implemented. The Project Manager, based on advice from the MRQ and the QMS Quality Council, will decide if a Corrective Action Plan is necessary.

Periodic management reviews are required by section 4.1.3 of the ISO 9001 standard. GSFC will conduct these reviews quarterly. The ISO 9001 requirement for management reviews ties the entire organization together. Everyone, including production workers, supervisors, and executive management, must be made aware of problems or issues that need to be addressed. By using this process, everyone will be involved and responsible.

The Center Director and MRQ will conduct an organization-wide meeting to prepare the employees for the visit by the Registrar. In addition, small group meetings will reinforce what the executive team presented and answer specific questions employees have. When the Registrar arrives, everyone should be informed and cooperative.

4.4. External Assessment

Pre-Assessment -- The purpose of the pre-assessment check is to uncover problems that could cause an unsuccessful audit. The pre-assessment will be conducted by the Registrar approximately four months prior to the actual audit. This will allow time to make required changes.

Registrar Participation -- The Registrar will assess the organization by observing the level of management participation and by seeing how well the quality system is functioning and meeting ISO 9001 requirements. The Registrar will conduct their own audits of the procedures. The Registrar will recommend one of the following:

- Registration
- Registration subject to noncompliances being cleared
- Registration subject to verification of noncompliances being corrected
- Registration denied

GSFC will strive for registration, understanding that some noncompliances will need fast corrective and preventive actions.

4.5. Surveillance and Improvement

Once the Center has received registration, the Registrar will conduct surveillance audits that address portions of the QMS. The MRQ will need to prepare and maintain an audit plan, staffing plan, and budgets required to maintain registration. This information will be incorporated into future fiscal plans.

Participate in Periodic Audits by Registrar -- After registration is received, surveillance audits by the Registrar will continue approximately every six months. The Registrar will contact the MRQ to set up times to conduct the surveillance audits. The Registrar charges for these audits; they are not included in the initial registration fee. A complete re-audit of the entire system to keep registration certification will occur approximately every three years.

Continue Operating/Improving System -- Upon receipt of ISO 9001 registration, the process of internal auditing will continue. The MRQ will continue to manage the internal auditing process and management will continue to conduct quarterly reviews.

5. Communications and Reporting

The PM is responsible for notifying management regarding status, progress, and issues regarding the QMS Council. This will be reflected in regular meetings and formal reports.

5.1. Meetings

During the life of the Project, many team meetings will be held at the Project and sub-Project levels as the individual components require. All meetings will encourage open discussion of objectives and strategies, candid assessments of progress, and, as required, resolution of problems that may arise.

QMS Council Meetings -- Scheduling of announced team meetings is the responsibility of the Project Manager. Each announced team meeting will be accompanied by two written communications:

- An advance agenda, which will ensure focused and direct discussion
- Minutes, which will be circulated to all who were in attendance and to those who were unable to attend

The written meeting minutes are intended to clarify decisions and permit ongoing open discussion of longer-range issues or disputed points.

Monthly Status Project Review Meeting -- Monthly meetings will be scheduled between the MRQ and The Project Manager to review the current status of the Project. The Project Manager will schedule the meetings and provide the agenda and content. Unless otherwise specified, these meetings are solely between The Project Manager and The Management Representative for Quality.

Formal Reports -- Independent of announced team meetings, three types of regular written reports are required. These reports, along with this Project Plan, constitute the backbone of the Project documentation. They provide a monthly assessment of Project status and leave a trail for historical evaluation.

Project Team Member Report – Each QMS Council member will report to the Project Manager on the last day of each month regarding the status of progress against objectives, work not planned but accomplished, objectives for the next month, and enumeration of issues or requests for assistance.

Project Management Report – The PM will report to the MRQ at the mid-point of each month regarding the status of progress against objectives, work not planned but accomplished, objectives for the next month, and enumeration of issues or requests for assistance.

Bimonthly Management Reviews – The MRQ and PM will report to the Center's Executive Council bimonthly regarding the status and progress of the Project, objectives for the next reporting period, and issues. Copies of materials used in this presentation and discussion notes will be filed by the MRQ.

6. Training

Because the successful completion of the Project depends on the participation of a large fraction of the Center's population, employee training will be a very important aspect. The Project Manager and the Employee and Organizational Development Branch, Code 114, will arrange for employee awareness training of civil service employees regarding ISO 9001, the role of each person, and the importance of the standard to the continued success of the GSFC.

Executive Management -- The Project Manager is responsible for providing training to executive management. The training will cover two major topics. The first topic is general ISO 9000 information. The second is the roles and responsibilities of executive management within the ISO 9000 process.

QMS Council -- The QMS Council will be trained in ISO 9001 fundamentals and documentation strategy by an experienced vendor.

Procedure Writers -- Procedure writers will prepare drafts of the procedures. Employees tasked to write procedures or work instructions related to the Quality Management System will complete classroom training related to ISO 9001 element and documentation fundamentals.

Supervisors-- Supervisors will be the primary source of education in the employee's workplace and will receive training in ISO 9001 fundamentals.

Employees -- Employees will be educated on the registration effort as the Project evolves. GSFC-wide announcements will be made by the Center Director and MRQ and small group training will be scheduled. All employees involved with ISO 9001 related procedures and work instructions will receive approximately four hours of training developed by the Center. In addition, employees will receive the necessary training and instruction for their workplace.

7. Control of Quality Documents

The quality manual, the procedures manual, and any work instructions will be controlled to ensure that all employees work from the most current documents.

The QMS documents, including the Quality Manual and SLPs will be controlled by the Documentation Administrator. Directorate or Project procedures and work instructions will be controlled at the appropriate level.

Over the life of the Project, the Documentation Administrator will work with the QMS Council to set up this control process. The process will be implemented with the approval of draft procedures by the QMS Council.

8. Deliverables

This section describes the deliverables that will be produced as a result of this Project.

8.1. Quality Manual

The purpose of the quality manual is to communicate the Center's quality intentions and to show how the requirements of the standard are being met. The Quality Manual will contain:

- Center Director authorization
- The quality policy
- A description of how the standard's requirements are satisfied
- Cross-references between the ISO 9001 standard and the System Level Procedures

8.2. System Level Procedures

The System Level Procedures that define the key processes affecting quality and conformance to requirements will be prepared, reviewed and issued. The SLPs will contain Center Director authorization, the purpose and scope, applicable references and definitions, authorities and responsibilities, a written description of implementation and a flowchart when required.

8.3. Other Documentation

As required by the SLPs, lower level procedures and work instructions for directorates, divisions, and branches will be created and controlled as part of this project. The format for such documents will be determined during the course of the project.

8.4. Quality Management System

An improved and well-documented quality management system is a goal of this Project.

8.5. Employee Training

All employees will be trained as necessary on ISO 9001 fundamentals and on those elements specific to their work. This awareness training should help employees to continue to work to improve the quality of the products made and to enhance the quality management system within the Center.

9. Schedule and Resources

9.1. Project Schedule

The mandated schedule from NASA HQ is that GSFC will be third party registered no later than October 1999. With management support, the date by which the Center can become registered is expected to be April 1999. The planned schedule and milestones are in Attachment 2.

9.2. Estimates of Staff Time

The percentage of staff time needed to complete this effort was calculated based on internal estimates. Staff time includes the MRQ, PM, QMS Council, Procedure Writers, auditors, and employee training. This has been converted to approximate dollars and included in the financial resources estimates in Attachment 3.

9.3. Financial Requirements

The financial requirements for training classes, various material, consultation services, and registration services have been estimated and are included in Attachment 3.

Attachment 1. Personnel Assignments

- Management Representative for Quality -- Arthur Fuchs, Code 100
- Project Manager -- David Cleveland, Code 300
- Documentation Administrator -- Harold Mitchell, Code 300

The QMS Council is composed of the above named individuals and the following Directorate personnel:

Marlene Forster	Code 210
Harold Mitchell	Code 303
John Oberright	Code 401
Madeline Butler	Code 510.1
Chuck Glasser	Code 660
Mitch Brown	Code 700
Gerald Morris	Code 821
Dr. Mary Cleave	Code 970.2

Attachment 2. Project Schedule

Center approval of preliminary QMS	April 1997
Development of SLPs	October 1997
Development of directorate procedures	March 1998
Development of work instructions	September 1998
Final revision to QMS	October 1998
Completion of first self-audit	December 1998
Completion of pre-certification audit	December 1998
Certification audit	April 1999

Attachment 3. Financial Requirements

The overall development budget for this Project follows.

		ESTIMATED COST (Over 24 mos.)	
INTERNAL COSTS			
Staff (Labor Only)			
MRQ			$50k
QMS Council			$350k
Administrative Support			$20k
Documentation Writers			$700k
Internal Auditing Staff			$100k
Staff Subtotal		$1170k	
Training			
Commercial PC Package			$15k
General Employee TNG			$500k
Employee OJT			$500k
Training Subtotal		$1015k	
Data Management s/w		$15k	
TOTAL INTERNAL COSTS	**$2200k**		
EXTERNAL COSTS			
Consulting			$25k
Pre-Assessment Fees			$30k
Registrar Fees			$100k
TOTAL EXTERNAL COSTS	**$155k**		
TOTAL PROJECT COST	**$2355k**		